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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/690,368	10/21/2003	Mark Alan Lysinger	03-C-041	6555

7590 09/09/2005

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EXAMINER

LAM, DAVID

ART UNIT PAPER NUMBER

2827

DATE MAILED: 09/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/690,368		LYSINGER, MARK ALAN	
	<b>Examiner</b>		<b>Art Unit</b>	
	David Lam		2827	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 June 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 21-30 is/are allowed.
- 6) ☒ Claim(s) 1, 14, 15, 17-19 and 31 is/are rejected.
- 7) ☒ Claim(s) 2-13, 16, 20-30, 32 and 33 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Allowable Subject Matter*

1. Prosecution on the merits of this application is reopened on claims 1-20, 31-33 considered unpatentable for the reasons indicated below:

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. Claims 1, 31 are rejected under 35 U.S.C. 102(a) as being anticipated by Ao (US 2004/0233692).

Regarding to claim 1, Ao discloses a magnitude content addressable memory (MCAM) comprising a plurality of MCAM cells, wherein the plurality of MCAM cells comprises: a first memory cell (221 of 205) for storing a data value (9) and a magnitude comparator (219) coupled to the first memory cell and operable to receive a comparison value (12 of 201) and the data values as inputs to produce first and second magnitude signal (1,0) as outputs. *See Figs 1, 4; ¶s [0021 & 0036 & 0043].*

As of claim 31, Ao discloses a magnitude content addressable memory (MCAM) comprising a plurality of MCAM cells, wherein a cell of the plurality of MCAM cells comprises: a first memory cell (221 of 205) for storing a data value (9); and comparison means (219),

Art Unit: 2827

coupled to the first memory cell and operable to receive a comparison value (12 of 201) and the data value as inputs (9 of 221), for generating first and second magnitude signals (1, 0) as outputs; wherein the first magnitude signal indicates if the comparison value is greater than the data value and the second magnitude signal indicates if the comparison value is less than the data value. *See Figs 1, 4; ¶s [0021 & 0036 & 0043].*

3. Claims 17-19 are rejected under 35 U.S.C. 102(a) as anticipated by Ao (US 2004/0233692) or, in the alternative, under 35 U.S.C. 103(a) as obvious over Lin (5,422,838).

Regarding to claim 17, Ao discloses a content addressable memory comprising: at least one group of MCAM cells (205-215), each MCAM cell comprising a data memory for storing a bit of a data word (9) and a magnitude comparator (166 or 219) for comparing the bit of the data word to a corresponding bit of a comparison word; a plurality of data bit lines, one for each MCAM cell in the group of MCAM cells, for supplying bits of the data word to the MCAM cells; a plurality of comparison bit lines, one for each MCAM cell in the group of MCAM cells, for supplying bits of the comparison word to the MCAM cells, wherein the magnitude comparators (166) of the MCAM cells are connected in a series arrangement and are operable to produce a first magnitude signal indicating whether the comparison word is greater than the data word and a second magnitude signal indicating whether the comparison word is less than the data word. *See Figs. 1-5; Pages 2-5.*

As of claim 18, Ao disclose wherein each MCAM cell further comprises mask memory (3) for storing a mask value and wherein the magnitude comparator is a controlled magnitude comparator controlled by the mask value. *See Fig 1, Page 2.*

With regard to claim 19, Ao further disclose wherein the at least one group of MCAM cells include a first MCAM cell group (205) for storing a first sub-word (9) of the data word and a second MCAM cell group (207) for storing a second sub-word of the data word (767) and further comprising a second stage comparator (199), responsive to the first and second magnitude signals and the first MCAM cell group and the first and second magnitude signals and the second MCAM cell group. *See Fig 3; Page 4.*

As per above discussion, Ao discloses the claimed invention but not explicitly discloses a word line for the group of MCAM cells. It would have been inherently included in a MCAM, if not it would have been obvious to form a word line for the group of MCAM cells to provide fast, efficiency, reliable data storage and retrieval in the MCAM device. *Note: Figs. 11-12 of Lin (5,422,838), cited to support known position.*

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ao (US 2004/0233692) in view of Schultz et al. (5,995,401).

As per above discussion, Ao disclose the claimed invention but lack an inclusion of wherein the first memory is an SRAM comprising a write line coupled to the SRAM; a first bit line couple to the SRAM for carrying a true data signal to be stored in the SRAM; and a second

Art Unit: 2827

bit line coupled to the SRAM for carrying a complementary data signal to be stored in the SRAM. However, Schultz et al. disclose a content addressable memory (CAM) comprising a first memory is an SRAM (210) and further comprises a write line (Figure 5) coupled to the SRAM; a first bit line (bl or bl0) couple to the SRAM for carrying a true data signal to be stored in the SRAM; and a second bit line (bln or bl0) coupled to the SRAM for carrying a complementary data signal to be stored in the SRAM. It would have been obvious to one having ordinary skill in the art at the time of the invention to modify Ao' CAM by utilizing Schultz et al.'s CAM with SRAM memory cell to provide an efficiency, reliable and fast content addressable memory (CAM).

*Allowable Subject Matter*

5. Claims 2-13, 20, 32 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. The following is an examiner's statement of reasons for allowance: Claims 21-30 are allowable over the prior art of record because none of the prior art whether taken singularly or in combination, especially when these limitations are considered within the specific combination claimed, to teach: Method of comparing of MCAM cells comprising step if the bit of the comparison word matches the bit of the data word: outputting the first magnitude signal of the preceding MCAM cell as the first magnitude signal of the current MCAM cell, and among other steps as claimed in independent claim 21.

Art Unit: 2827

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Lam whose telephone number is 571-272-1782. The examiner can normally be reached on 6:00 – 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoai Ho can be reached on 571-272-1777. The fax phone numbers for the organization where this application or proceeding is assigned is (571) 272-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

**D. Lam**

August 26, 2005

  
**DAVID LAM**  
**PRIMARY EXAMINER**